INFECTIOUS DISEASE DISCLOSURE BY DENTAL HEALTH CARE PROVIDERS: A PATIENT'S RIGHT TO KNOW

An Undergraduate Research Scholars Thesis

by

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ABSTRACT

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Bloodborne pathogens (BBPs) such as hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) all pose a risk of transmission from dental health care providers to patients. The purpose of this research is to educate providers on the importance of informing patients of the risks associated with exposure-prone procedures (EPPs) performed by DHCWs positive for HIV or HBV. Three conditions are required for infectious disease transmission; 1) a DHCW must have a virus circulating in their blood, 2) an injury or condition must be present to allow direct exposure of body fluids, and 3) there must be a port of entry for the viral transmission to occur. Texas is the only state that requires DHCWs to disclose their infectious disease status to their patients and obtain written consent prior to performing EPPs. There are six documented incidents of HBV transmission and one case of HIV transmission from a DHCW to patients in the United States. Two of the HBV transmissions, and HIV transmission, lack an identifiable breach in infection control. Due to the long incubation periods of HBV and HIV, it is difficult to correlate a diagnosis of these viruses to a DHCW when the DHCW's seropositive status is undisclosed. Future research is needed to assess the attitudes, knowledge,

and compliance of DHCWs disclosing their infectious disease status to patients. It is the responsibility of DHCWs to know and understand the law, respect their patients, and ensure they are informed of any potential risks associated with EPPs.

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KEY WORDS

Texas State Board of Dental Examiners (TSBDE)

Blood-borne pathogens (BBPs)

Human immunodeficiency virus (HIV)

Hepatitis B virus (HBV)

Hepatitis C virus (HCV)

Exposure-prone procedure (EPP)

Dental health care worker (DHCW)

Centers for Disease Control and Prevention (CDC)

INTRODUCTION

The Texas State Board of Dental Examiners (TSBDE) rules and regulations, chapter 108, subchapter B, rule 108.25 states: "A dental health care worker who is infected with HIV or HBV and is HBeAg-positive shall notify a prospective patient of the dental health care worker's seropositive status and obtain the patient's consent before the patient undergoes an EPP performed by the notifying dental health care worker."[1] The word "shall", when used in legal documents, expresses a command or what is mandatory. The term "dental health care workers" encompasses clinicians who operate intra-orally, as well as individuals indirectly involved in patient care and/or are potentially exposed to infectious agents.[2] An EPP is classified by the Centers for Disease Control and Prevention (CDC) by the risk of percutaneous injury posed to any health care provider due to limited visibility or confinement within an anatomical site.[3] Following the highly publicized transmission of HIV to a cluster of patients in the late 1980's, the CDC recognized the risk of disease transmission from an infected health care provider to the patient.[3] Realization that BBPs could be transmitted while conducting an EPP warranted the formation of an established set of guidelines to dictate the continued practice of infected DHCWs.[3] The topic of DHCWs disclosing their infectious disease status to patients is highly controversial. The purpose of our research is to educate DHCW of the importance of informing patients undergoing an EPP performed by a DHCW who is positive for HIV and/or HBV. This topic aligns with the current American Dental Hygienists' Association's national research agenda of regulation regarding the scope of practice.

SECTION I

INFECTIOUS DISEASE TRANSMISSION

Objective 1

It is difficult to ascertain the exact risk to a patient being treated by an infected DHCW due to a number of variables that influence the rate of disease transmission.[4] According to the CDC, for a DHCW to pose a risk of BBP transmission to patients all three of the following must be present: 1) the DHCW must have the virus circulating in their bloodstream; 2) there must be an injury or condition present to allow direct exposure of infectious body fluids; and 3) there must be a port of entry for the viral transmission to occur.[2,3]

The CDC recognizes the following BBPs as having the greatest risk of disease transmission in a health care setting: HBV, HCV, HIV.[2,4] HBV is recognized as the most efficiently transmissible following a percutaneous injury.[5] The risk of transmission of HBV from exposure to infected bodily fluids ranges from six to thirty-seven percent.[4] There is a nineteen percent greater incidence of transmission associated with the provider who is positive for circulating hepatitis B e antigen (HBeAg-positive); however, it became known that the HBeAg-negative infected provider could also transmit HBV to their patients.[3,5] Examining cases of transmission of HBV from health care workers to patients between the years of 1969 and 2010 indicates seventy-seven percent of the cases resulted from a provider who is HBeAg-positive.[5] More recent guidelines by the CDC recommend HBV DNA serum levels be used to determine the infectivity of the DHCW because DNA serum levels serve as a better indicator than HBeAg status alone.[3]

To help prevent transmission of BBPs, the CDC recommends adhering to standard precautions for the DHCW, which include vaccination against HBV, standard infection control precautions, safer devices (i.e. puncture-resistant sharps containers and needle-retracting devices), and implementation of safe work practices.[2,3] Due to the evolution of standard precautions, the CDC estimates that the incidence of HBV infections have fallen five-fold between 1980 and 2010, from 208,000 to 38,000 new infections per year.[5]

The transmission of HCV and HIV are, presumably, less likely to occur, because chronically infected patients have much lower circulating viral loads than those who are carriers of HBV.[4] The risk of transmission associated with exposure to an HCV-positive individual is less than three percent.[2,4] It is worth noting there have been no documented cases of HCV transmission from a DHCW to a patient in the dental field.[2,4] While the risk of HIV transmission is zero point three percent after a single percutaneous exposure, the risk of transmission drops to zero point one percent if involving exposure of mucous membranes, including the oral cavity.[2,4] The risk of exposure for skin contact with HIV-containing blood remains unknown, but the CDC reports the risk to be less than the risk of exposure involving mucous membranes.[2]

CDC reports indicate that the risk associated with transmission of HBV, HCV, and HIV are minimal during EPPs and inconsequential in the case of noninvasive procedures.[4] The CDC places dental procedures in two categories. Category I includes procedures with a history of provider to patient transmission of HBV and are more likely to pose a risk to both the provider and the patient.[3] This includes major oral and maxillofacial surgery procedures such as hard and soft tissue biopsies accompanied by suturing, gingivectomy, mucogingival and osseous surgery, alveoplasty, etc.[3,4] Category II includes all other procedures not specified in Category I and usually poses little to no risk of viral transmission to the DHCW.[3] Category II is characterized by

the use of needles outside of the patient's oral cavity and examination procedures not involving sharp objects.[3] The category in which each procedure is placed plays a large role in determining the risk of transmission from provider to patient.

SECTION II

RULES, REGULATIONS, AND ETHICAL RESPONSIBILITIES

Objective 2

In Texas, DHCWs with HIV, or HBV with HBeAg-positive status, may continue to perform EPPs if they received advice from an expert review panel and notified and received consent from their patients.[6] Texas is the only state that requires DHCWs who are HIV-positive, or HBV-positive with HBeAg-positive status, to notify and obtain written consent from their patients prior to performing an EPP. Expert review panel members include individuals who have expertise in the provider's area of specialty, epidemiology specialists, human resource professionals, legal counsel, or those who are familiar with the transmission of BBPs.[3] The expert review panel will convene to determine what restrictions, if any, will be placed on the DHCW in regards to performing EPPs, as defined by the state of licensure. In most cases, the infected DHCW's viral status, expertise, procedure technique, adherence to standard precautions of infection control, and physical ability to safely carry out EPPs will all be taken into consideration before the DHCW may continue practice.[3] DHCWs who do not perform EPPs will not have their practice restricted as the risk of disease transmission is insignificant.[6] The majority of the states' rules and regulations state DHCW's must adhere to the CDC Guidelines for Infection Control in Dental Health-Care Settings, which was published in 2003.[7] According to these guidelines, when no state regulations are in place, the CDC recommends infected DHCWs refrain from performing EPPs until a review panel has been consulted.[2] There are no restrictions placed on providers who are HCV-positive.[2]

DHCWs have an ethical obligation to know their infectious disease status.[3,4] It is the responsibility of DHCWs to acquire the three-dose series of HBV vaccine, and have their immunogenicity checked following vaccination.[3] If immunogenicity is not achieved through the primary vaccination, a booster may be necessary to become immune against the virus. DHCWs are also ethically obligated to adhere to standard precautions of infection control, which decreases the risk of transmission of BBPs in the dental office.

SECTION III

RESPONSIBILITY TO DISCLOSE AND ASSOCIATED LIMITATIONS

Objective 3

Historically, there have been multiple incidences of transmission of HBV from DHCWs to patients. Most of the providers responsible were oral surgeons. Between the years 1969 and 1974, an oral surgeon with a positive HBeAg status infected about forty-five patients.[5] Upon investigation, it was discovered that the oral surgeon did not wear gloves while treating their patients.[5] A similar case occurred between the years of 1978-1979, but, in addition to not wearing gloves while providing treatment, the oral surgeon had generalized eczematous dermatitis.[5] It was also uncovered that, while suturing their patients, they failed to use a needle holder, and instead, held the needle in their exposed hands.[5] Although a handful of cases can be noted for failure to comply with current standard precautions, only two could not be attributed to an identifiable breach in infection control.[5] It is unknown whether these two DHCWs were aware of their HBV status.[5] In 1975 and 1980, a total of forty-six patients were infected by their dental providers with no explanation related to a breach in infection control.[5] The last known documented case of HBV transmission from DHCW to patients occurred between 1984-1985 by a general dentist who claimed to be unaware of their infectious status and failed to wear gloves.[5] As a result, a total of twenty-four individuals were suspected to be infected.[5]

On the contrary, there is only one known documented case of provider-to-patient transmission of HIV in the dental health care field. The incidents occurred from 1987-1989, where five patients (patients A, B, C, E, and G) reported contracting HIV from a general dentist while undergoing procedures in a Florida dental office.[8] A sixth patient, “Patient I,” was later

identified as HIV-positive in 1992 following the investigation of the initial five patients.[8] Despite adhering to infection control guidelines, including the use of gloves during patient treatment, transmission of HIV from the dentist to patients still occurred. The procedures performed on each of these patients included prophylaxis, extractions, gingivectomy, periodontal scaling, restorative fillings, fixed prosthodontics, and endodontic therapy. None of the six patients recalled the dentist injuring themselves from a needlestick or cut from an instrument during their procedures.[8] The specific nature of HIV transmission from the dentist to the patients is unknown.[8] The dentist was diagnosed with HIV in 1986, which progressed to AIDS in 1987, and continued to practice until the summer of 1989.[9] The dentist continued to perform EPPs without restriction throughout his final two years of practice. This situation is just one example of the importance of disclosing infectious disease status to patients prior to performing EPPs.

There are limitations to identifying and reporting transmission of an infectious disease from a DHCW to a patient. One of the limitations is the lack of disclosing infectious disease status to an expert review panel and/or a prospective patient. It is increasingly difficult to correlate the diagnosis of HIV and HBV with a specific DHCW when no documentation is reported. It may take four to six weeks, or up to three months, for an individual to test positive for HIV or HBV due to the virus' incubation period.[10] This delay in symptoms can increase the difficulty of identifying the primary source of the infection. In the acute phase of an HIV infection, following the incubation period, a person will begin to show flu-like symptoms.[9,10] Patient A, in the Florida case, presented with flu-like symptoms within four weeks of a tooth extraction.[9] HIV testing was not included in the differential diagnosis for Patient A due to lack of high-risk behaviors. Another patient seen by the dentist did not begin to show the acute symptoms of HIV until one year after their dental visit. During the latency phase of HIV, patients

do not typically show symptoms, despite the HIV being active. In Patient A's case, the infection progressed much quicker. In May of 1989, Patient A was diagnosed with oral candidiasis and diagnosed, in December 1989, with AIDS.[9] The diagnosis of AIDS occurred approximately twenty-four months after the tooth extraction.[9] While there are long-term antiviral therapies for HBV and HIV, there is still no cure for the diseases. Had Patient A known the dentist had HIV, their HIV diagnosis, and subsequent treatment, could have been established at an earlier stage of the disease process.

CONCLUSION

Of the historical cases of infectious disease transmission from DHCWs to patients in the United States, two cases of HBV transmission as well as the case of HIV transmission cannot be attributed to an identifiable breach in infection control.[5,2] This reinforces the importance of adhering to state laws and regulations regarding disclosure of DHCWs infectious disease status to patients and an expert review panel. To our knowledge, there is no research to show that DHCWs in Texas know of and are complying with the law requiring them to disclose their HIV-positive or HBV-positive status to their patients. A survey is needed to assess the knowledge, attitudes, and practices of DHCWs related to disclosing their infectious disease status to patients. Questions to ask would include, but are not limited to: "If you were positive for an infectious disease, would you tell your patients?", "Are you aware that you are required to disclose your infectious disease status to your patients?", "For what reasons would you not want to tell your patients?" DHCWs have the obligation to adhere to standard precautions of infection control, ensure they are vaccinated against HBV, and are knowledgeable of their seropositive status. There are documented cases of infectious disease transmission from DHCWs to patients in the United States. These instances are rare, and the risk of disease transmission from a DHCW to patients is low; yet, the impact is significant. It is our duty as DHCWs to know and understand the law, respect our patients, and ensure they are informed of any potential risks involved with EPPs. We expect our patients to be honest with us on their medical history. Do we not owe it to them to do the same?

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